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FOREST SURVEY RELEASE NO. 8

MAY 15, 1941

THE DISTRIBUTION OF COMMERCIAL FOREST TREES  
IN NORTH CAROLINA 1.317

by

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A FOREST SURVEY PROGRESS REPORT



U. S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE

Appalachian Forest Experiment Station  
R. E. McCardle, Director  
Asheville, N. C.

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## PREFACE

Through the McSweeney-McNary Act of 1928, Congress authorized the Secretary of Agriculture to conduct a comprehensive survey of the forest resources of the United States. The Forest Survey was organized by the Forest Service to carry out the provisions of the Act, and each of the 12 Regional Forest Experiment Stations is responsible for the work in its territory. In the Middle Atlantic States the Forest Survey is an activity of the Appalachian Forest Experiment Station, Asheville, North Carolina.

The work of the Survey is divided into 5 major phases:

1. Inventory. Determination of the extent, location, and condition of forest lands, and the quantity, species, and quality of the timber on these lands.
2. Growth. Determination of the current rate of timber growth.
3. Drain. Determination of the amount of industrial and domestic wood use, and the total loss resulting from fire, insects, disease, suppression, and other causes.
4. Requirements. Determination of the current and probable future requirements for forest products by all classes of consumers.
5. Policies and plans. Analysis of the relation of these findings to one another and to other economic factors as a basis for public and private policies and plans of forest land use and management.

This progress report presents information on one part of the inventory phase of the Survey and deals specifically with the geographic distribution of the more important commercial forest trees in North Carolina.

The report is made possible through the assistance received from the personnel of the Work Projects Administration. Particular credit is due Mr. W. H. Winston and Mr. Harry Watkins of the Work Projects staff. The preparation of the maps from the basic field data were official projects 765-32-3-3 and 165-2-32-94.

Assisting Survey Staff

G. E. Morrill) Preparation of  
T. C. Evans ) Tables of Volume

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# THE DISTRIBUTION OF COMMERCIAL FOREST TREES IN NORTH CAROLINA

## PURPOSE OF REPORT

The geographic distribution of the species of forest trees and their sizes is of considerable economic importance to the wood-using industries. The ordinary forest type maps are valuable for many purposes but for industrial use maps are needed which show where certain species and tree sizes are most abundant. Established plants must know the location of areas with suitable timber supplies and prospective wood-using industries need the same information as an aid in selecting desirable locations.

The maps included in this report are designed to provide more definite information regarding the location of forest tree species in North Carolina. They show where selected species of commercial importance occur and, what is more important from an industrial standpoint, the areas of dense concentration. Forest industries can thus avoid the expense of wide reconnaissance and can concentrate their wood procurement activities in the most favorable localities.

## METHOD OF CONSTRUCTING MAPS

The sample plots established in 1937 and 1938 by the Forest Survey in the comprehensive inventory of the forest resources of North Carolina have been used in the construction of these maps. The plots were located at intervals of one-eighth of a mile on parallel compass lines 10 miles apart extending across each of the survey units into which the state was divided (fig. 1). The data recorded on each forest plot included a brief over-all description of the forest stand and a tally of the species, number, and size of all forest trees one inch and larger in diameter at breast height.

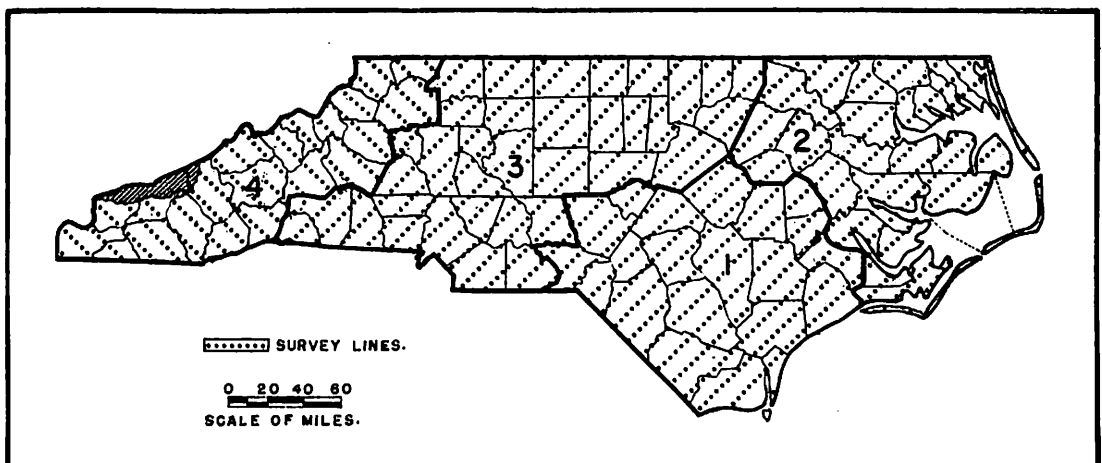


FIGURE 1- APPROXIMATE LOCATION OF SURVEY LINES IN NORTH CAROLINA.

This procedure gave an accurate picture of the timber stand on each forest plot, but because of the necessity for using a sampling method rather than a 100 percent tally of all forest land, each plot represents about 800 acres of forest. Obviously many local concentrations of timber could not be sampled and the maps are therefore not reliable for locating timber on small ownerships. Nearly 38,000 uniformly distributed plots in North Carolina do provide, however, a dependable measure of the commercial concentration of certain species and sizes within counties.

On each map the total volume of sound trees is shown by diameter class for each unit and for the state. The volume of the under-sawlog-size trees is given in cords and the net volume of saw-timber material is given in board feet measured by the International  $\frac{1}{4}$ -inch rule, a close approximation of green lumber tally. In a few units the volume of certain species is insignificant and is not shown separately.

The accompanying maps are of two distinct kinds; those based upon forest types and those based upon species and diameter class. They are described as follows.

#### Maps Based on Forest Types

The maps showing the distribution of longleaf, loblolly, shortleaf, pond, and Virginia pines are based upon forest types. That is, every dot represents a forest plot on which the particular pine species is predominant. In the map showing the distribution of shortleaf pine in North Carolina, for example, each dot is a forest plot typed in the field as shortleaf pine. Other pine species may have been present upon the plot but not in sufficient quantity to influence the type classification. This method delineates the areas dominated by a particular pine species and is not intended to indicate the maximum range of the species.

#### Maps Based on Species and Diameter Class

The maps showing the distribution of white pine, redcedar, hemlock, cypress, red and white oaks, chestnut oak, chestnut, ash, hickory, sweetgum, blackgum and tupelo, yellowpoplar, and basswood are based on the occurrence of individual trees on the sample plots. For example, each dot on the maps showing the distribution of redcedar represents a plot on which there was at least one sound redcedar tree 8.0 inches or larger in diameter. On many of these plots there were undoubtedly several large redcedars. As every species is not plotted uniformly in regard to the number of individual trees per plot or size-class represented, the basis is given in the legend of each map. The distribution of oaks, gums, and yellowpoplar 18.0 inches d.b.h. and larger has been presented to facilitate industrial use of these premium sizes.

# THE FORESTS OF NORTH CAROLINA<sup>1/</sup>

## Species

Forests occupy 18 million acres, 59 percent of the land area of the state. Loblolly pine is the most abundant species, dominating the forest over much of the Coastal Plain. Blackgum, tupelo, and pond pine are also important in many of the swamps of this area. Shortleaf pine is most common in the Piedmont of North Carolina although it is largely replaced by Virginia pine in that part of the Piedmont bordering the Blue Ridge. A great variety of species are found in the mountain region. Sound dead and dying chestnut has the greatest commercial volume of any single species in the mountains but yellowpoplar and several species of oaks are more important as a future source of sawtimber. Throughout the state the hardwoods intermingle with the pines and altogether constitute nearly one-half of the total sound-tree volume.

## Forest Types

The loblolly pine-hardwoods type is the most extensive, occupying 26 percent of the forested land in the state. About 17 percent of the forest is in the shortleaf pine-hardwoods type. The third largest pine type is pond pine-hardwoods found on nearly two million acres in the Coastal Plain, 11 percent of the total forest land. Smaller in area are the longleaf pine-hardwoods, Virginia pine-hardwoods, and white pine-hardwoods types, which occupy respectively five, four, and two percent of the forest area.

Nearly four million acres of forest, 22 percent of the total, is classified as upland hardwoods. This broad classification covers a variety of hardwood species combinations but in general the hardwood forests of the Piedmont are an oak-hickory association and those of the mountains are oak-hickory and oak-chestnut. The bottomland hardwoods type is found chiefly in the large swamps and river over-flow basins of the Coastal Plain. It occurs on about 13 percent of the forest land.

## Forest Conditions

The forests of the state are predominantly second growth. Old-growth stands occupy only 12 percent of the forest land, and many of them are small scattered tracts in themselves of limited commercial importance. The 7.5 million acres of second-growth sawtimber constitute 42 percent of the forest area. About eight million acres, 45 percent, are stocked with young second growth under-sawlog-size. The mountain region has the highest proportionate area stocked with these young stands. Less than two percent of the forest land is clear-cut and not restocking, practically all of it in the Coastal Plain.

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<sup>1/</sup>A detailed description of North Carolina's forest resources and industries is presented in the Forest Survey Releases listed on page 4. Copies of these releases may be obtained by writing the Appalachian Forest Experiment Station, Asheville, North Carolina.

FOREST SURVEY RELEASES PERTAINING TO NORTH CAROLINA

Forest Resources of the Southern Coastal Plain of North Carolina.  
Forest Survey Release No. 4, April 1, 1940. (Survey Unit No. 1).

Forest Resources of the Northern Coastal Plain of North Carolina.  
Forest Survey Release No. 5, June 15, 1940. (Survey Unit No. 2).

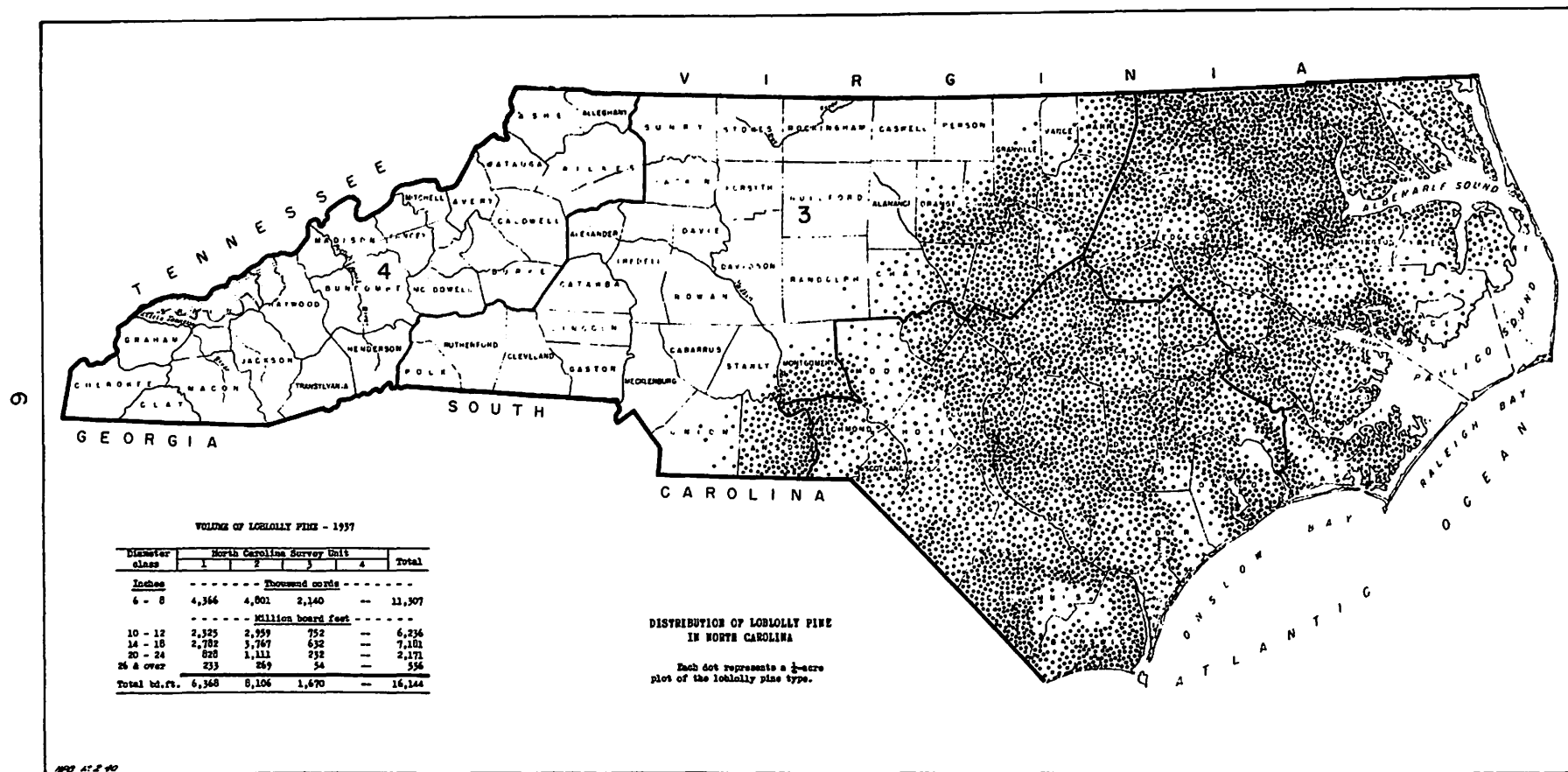
Forest Resources of the Piedmont Region of North Carolina.  
Forest Survey Release No. 6, November 15, 1940. (Survey Unit No. 3).

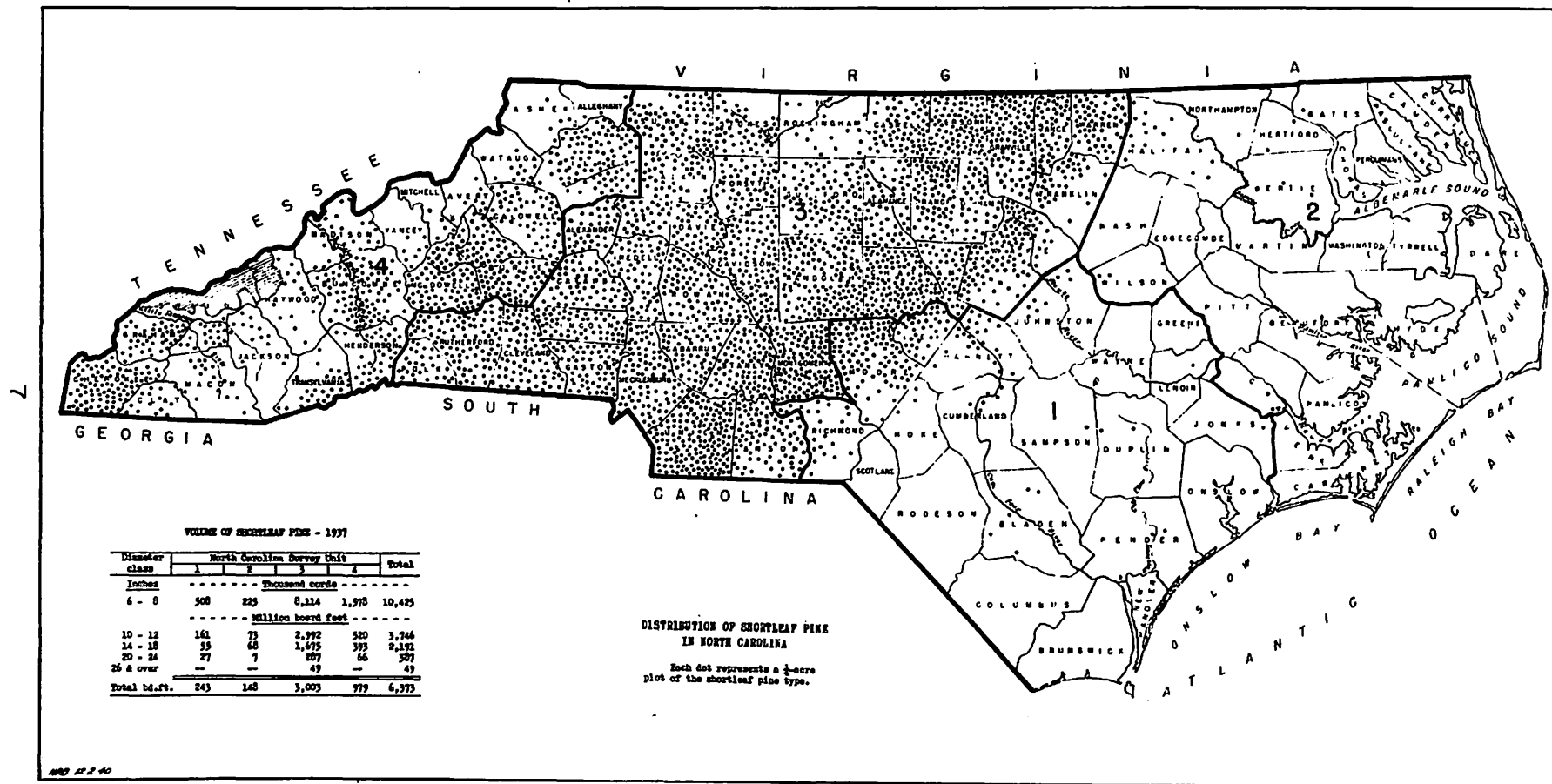
Forest Resources of the Mountain Region of North Carolina.  
Forest Survey Release No. 7, April 1, 1941. (Survey Unit No. 4).



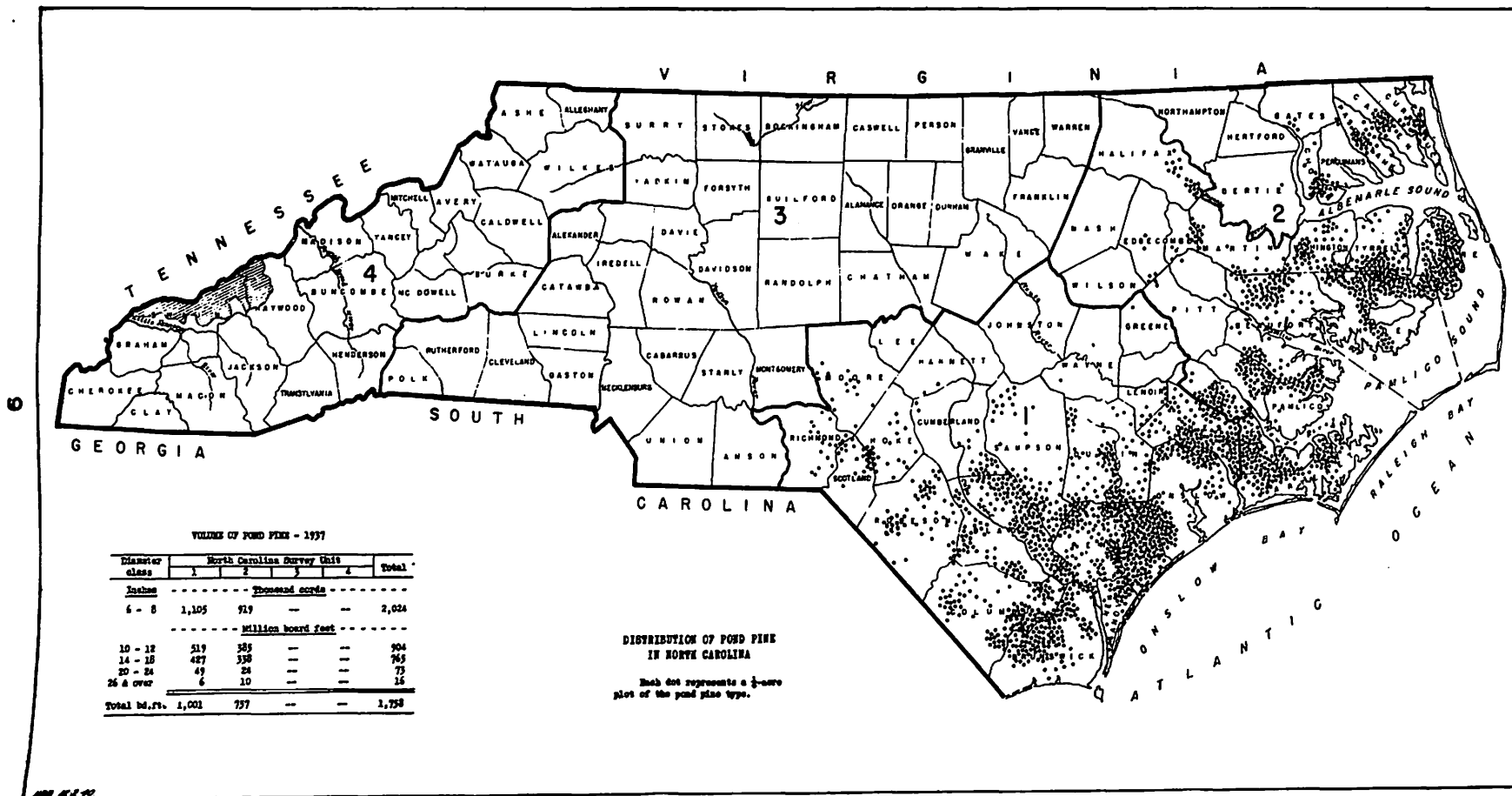
## DISTRIBUTION MAPS OF COMMERCIAL FOREST TREES

<u>Map</u>	<u>Tree Species Included</u>
Loblolly pine	- Loblolly pine
Shortleaf pine	- Shortleaf pine
Longleaf pine	- Longleaf pine
Pond pine	- Pond pine
Virginia pine	- Virginia pine
White pine	- Eastern white pine
Redcedar	- Eastern redcedar
Hemlock	- Eastern hemlock, Carolina hemlock
Cypress	- Baldcypress, pondcypress
Red oak	- Black, scarlet, water, willow, southern red, cherrybark, and northern red oak.
White oak	- White oak, swamp chestnut oak
Chestnut oak	- Chestnut oak
Chestnut	- American chestnut
Ash	- White, red, green, and Carolina ash
Hickory	- Bitternut, water, shagbark, mockernut, and pignut hickory.
Sweetgum	- Sweetgum
Blackgum	- Blackgum, water tupelo
Yellowpoplar	- Yellowpoplar
Basswood	- American, white, and Carolina basswood.

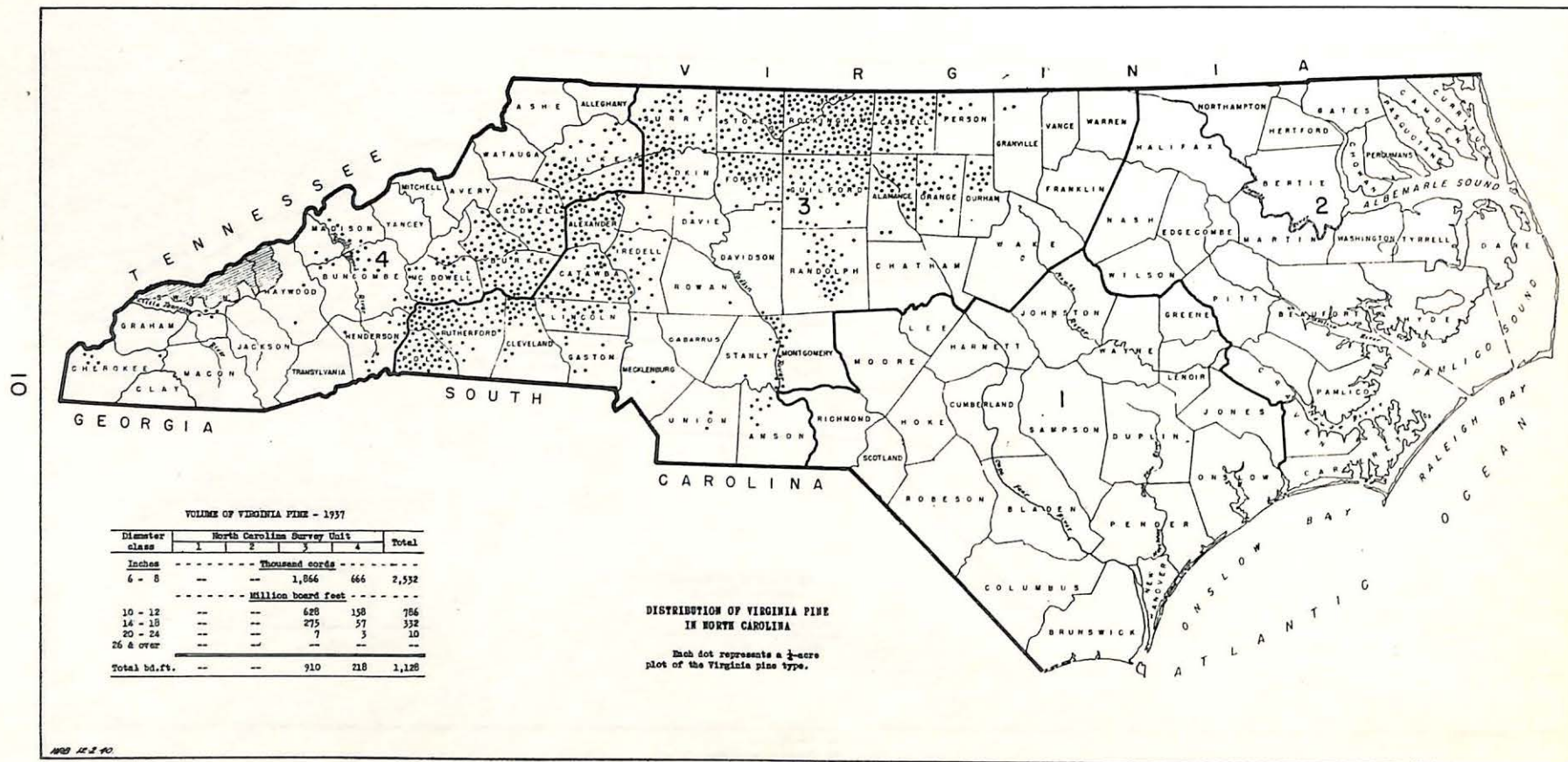


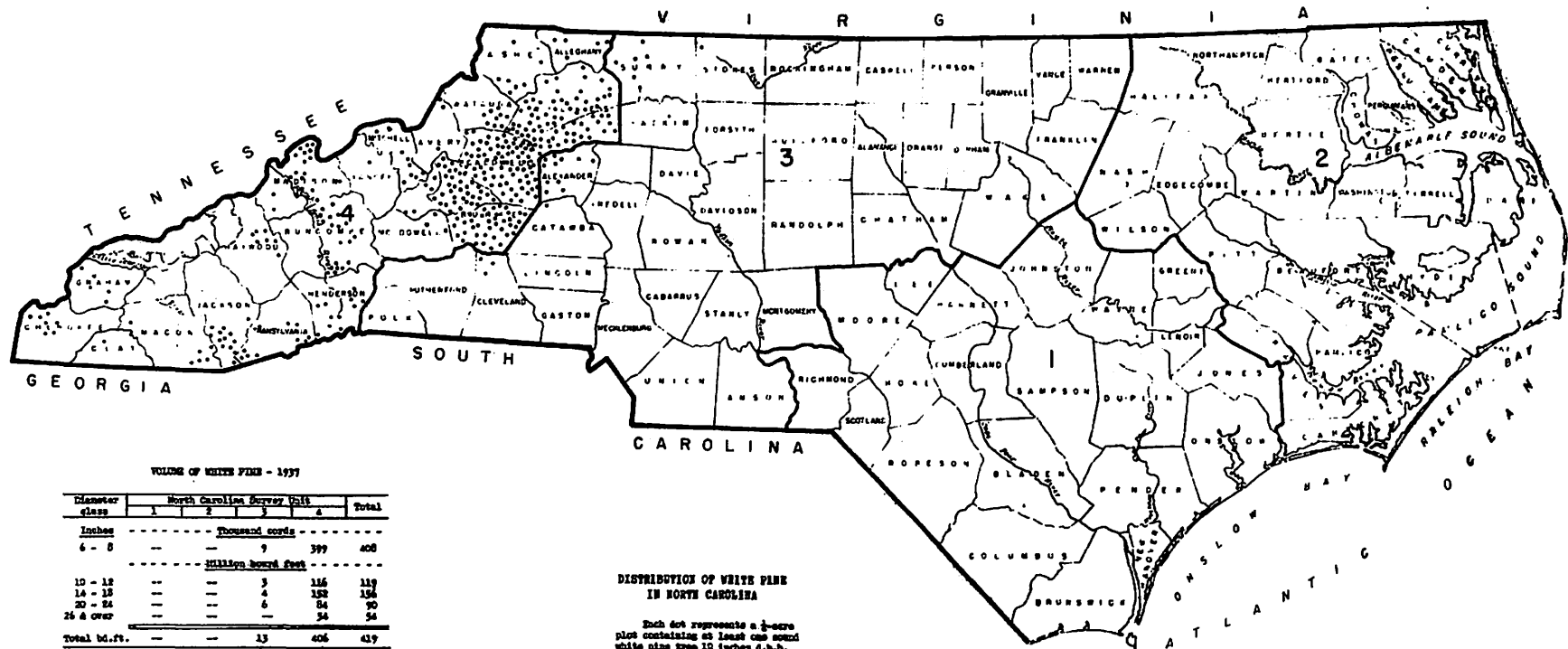


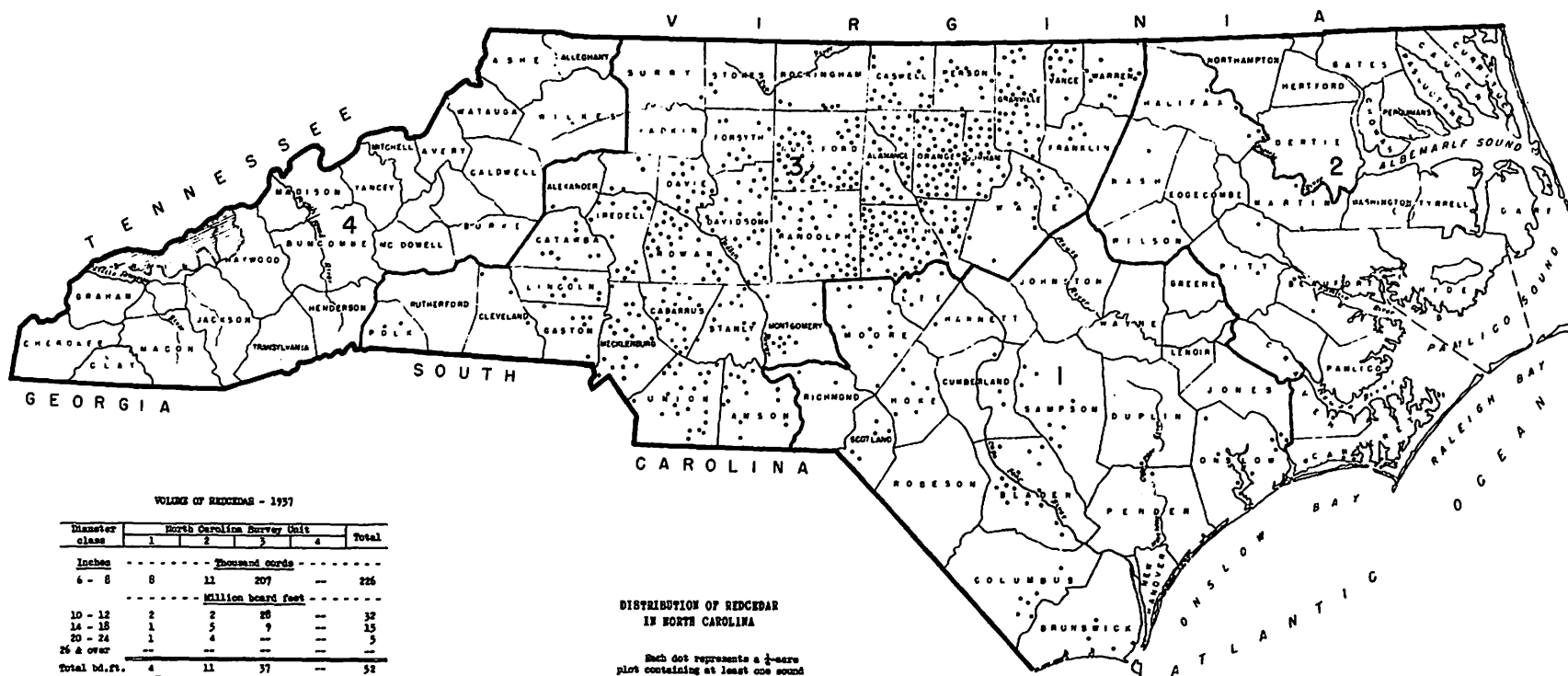




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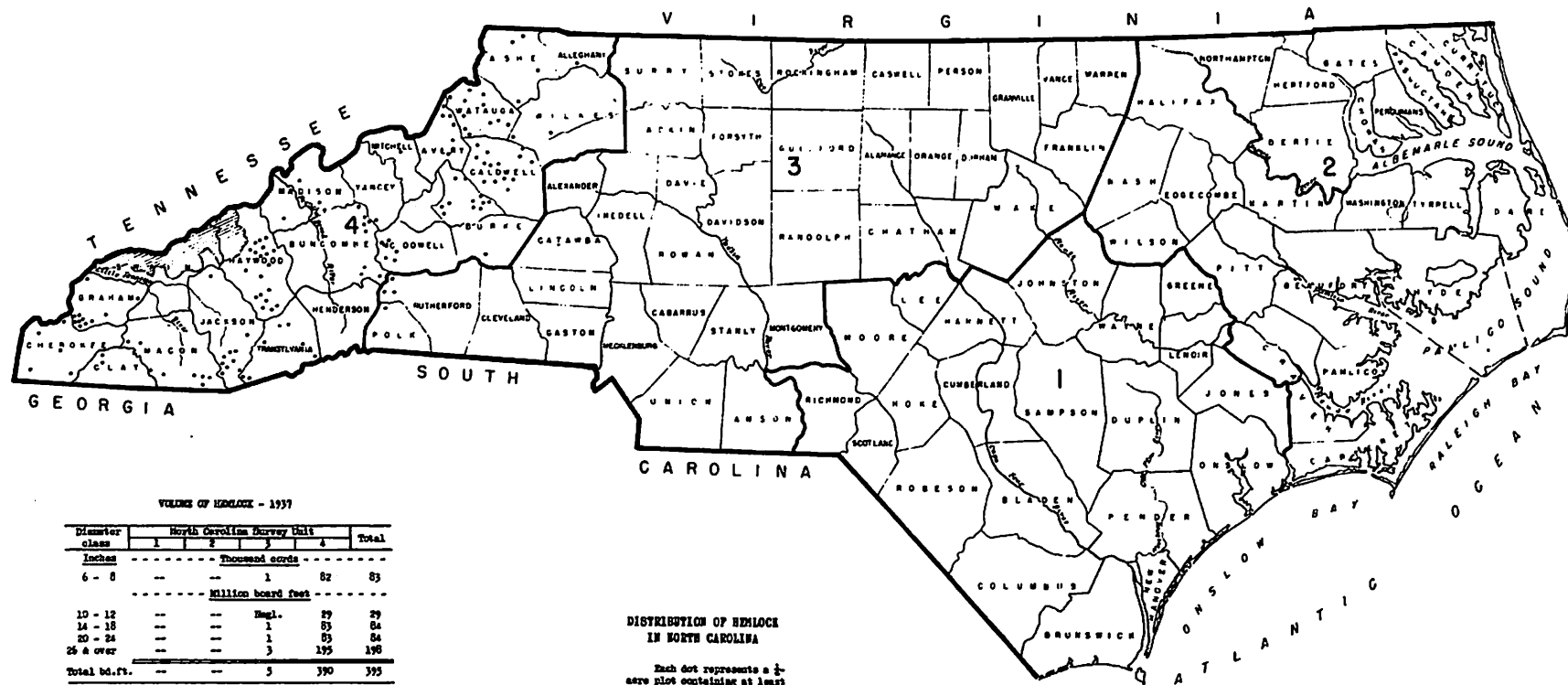




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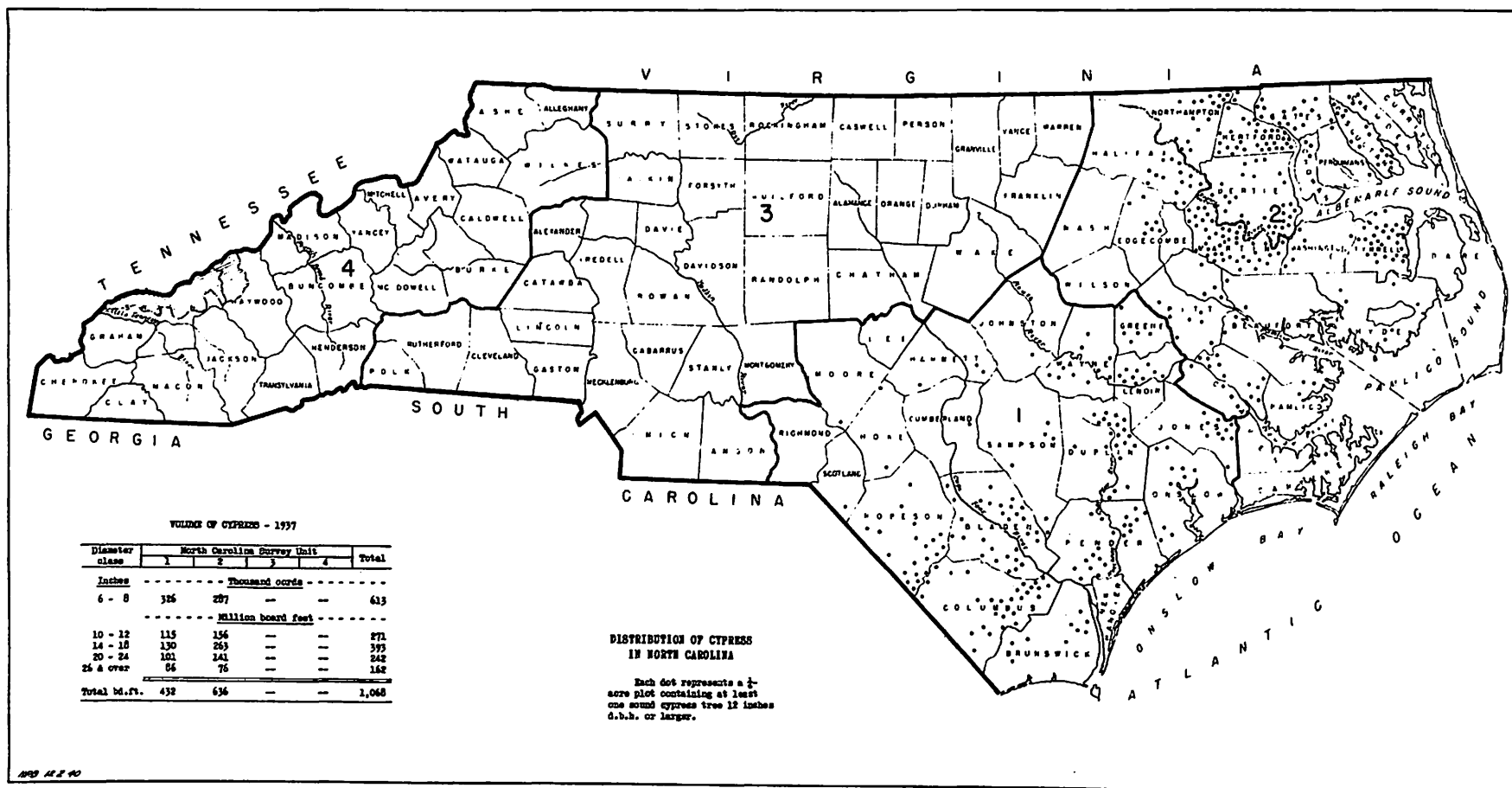
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APPALACHIAN FOREST EXPERIMENT STATION





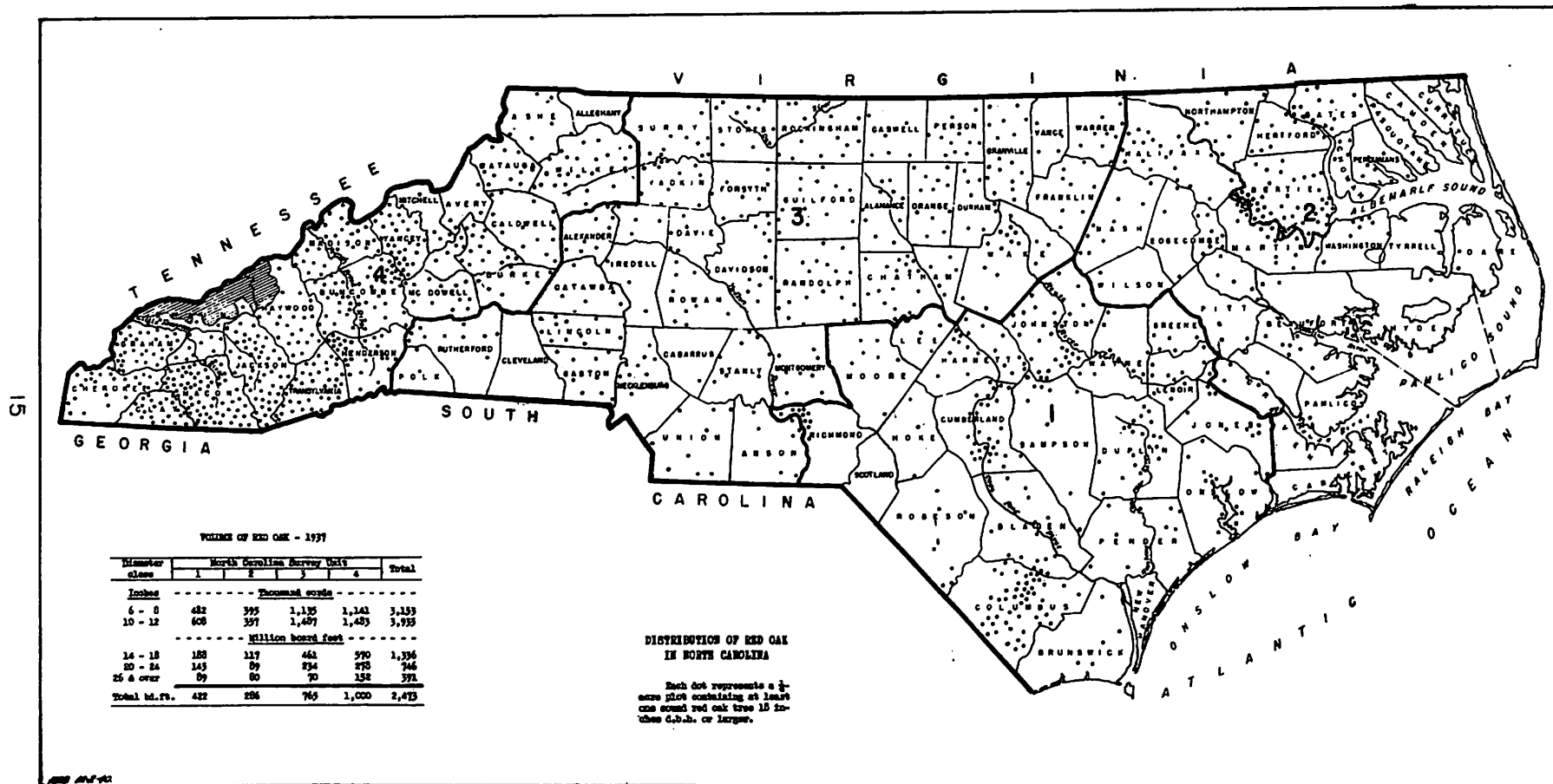
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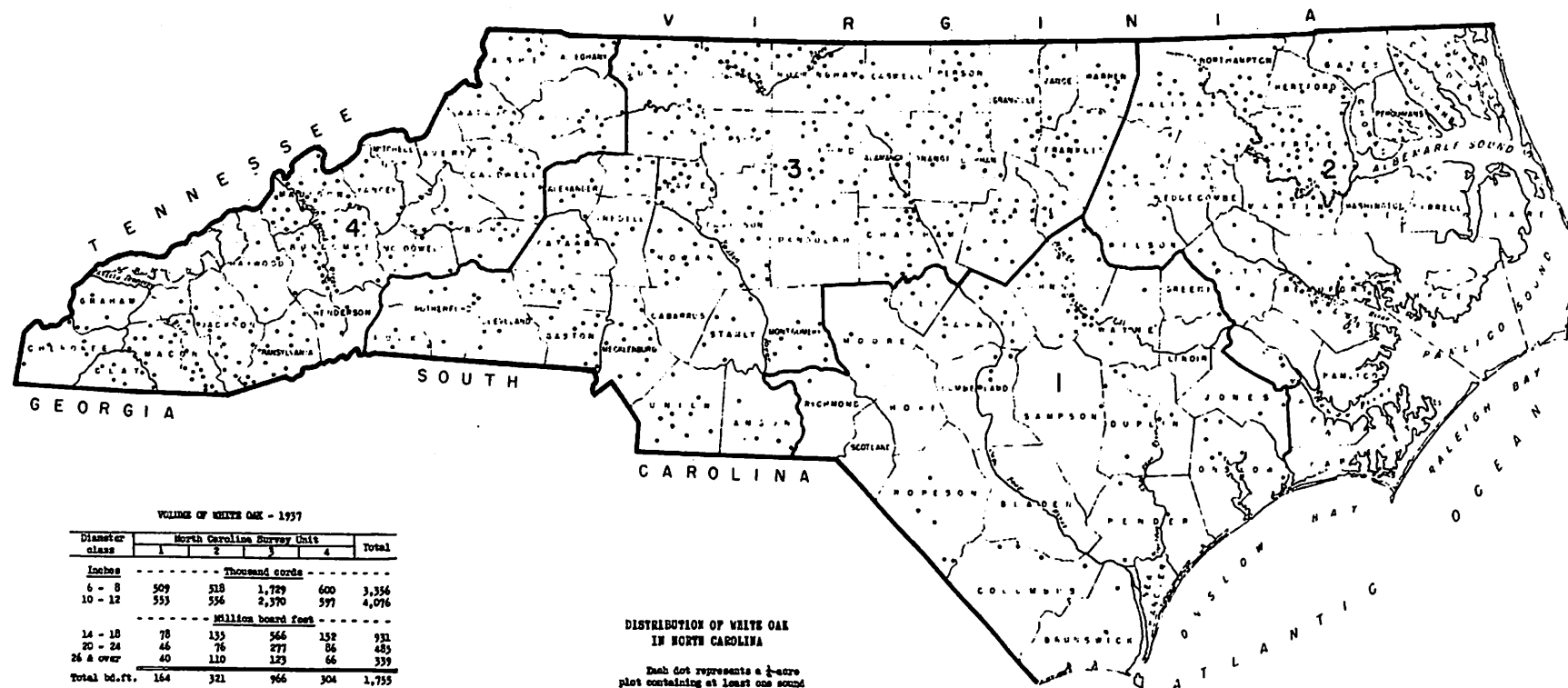
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APPALACHIAN FOREST EXPERIMENT STATION



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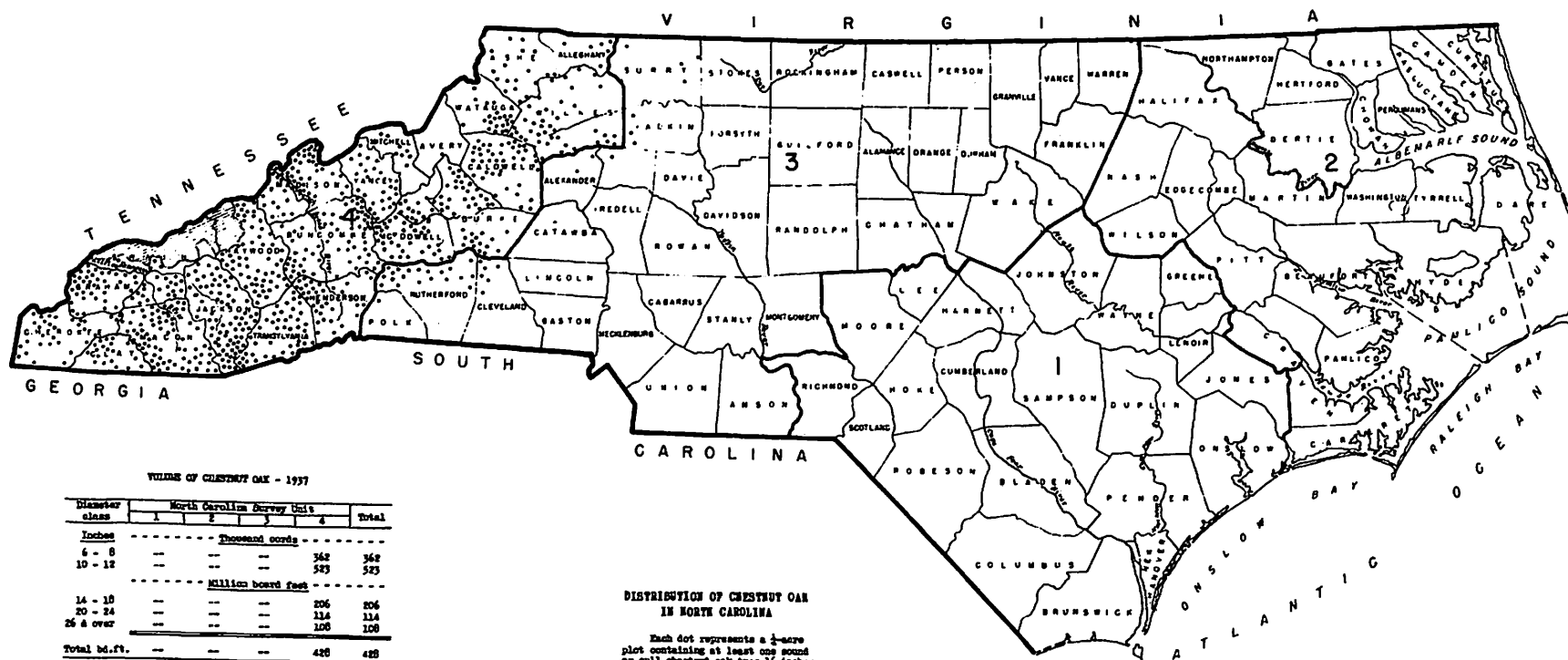
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APPALACHIAN FOREST EXPERIMENT STATION

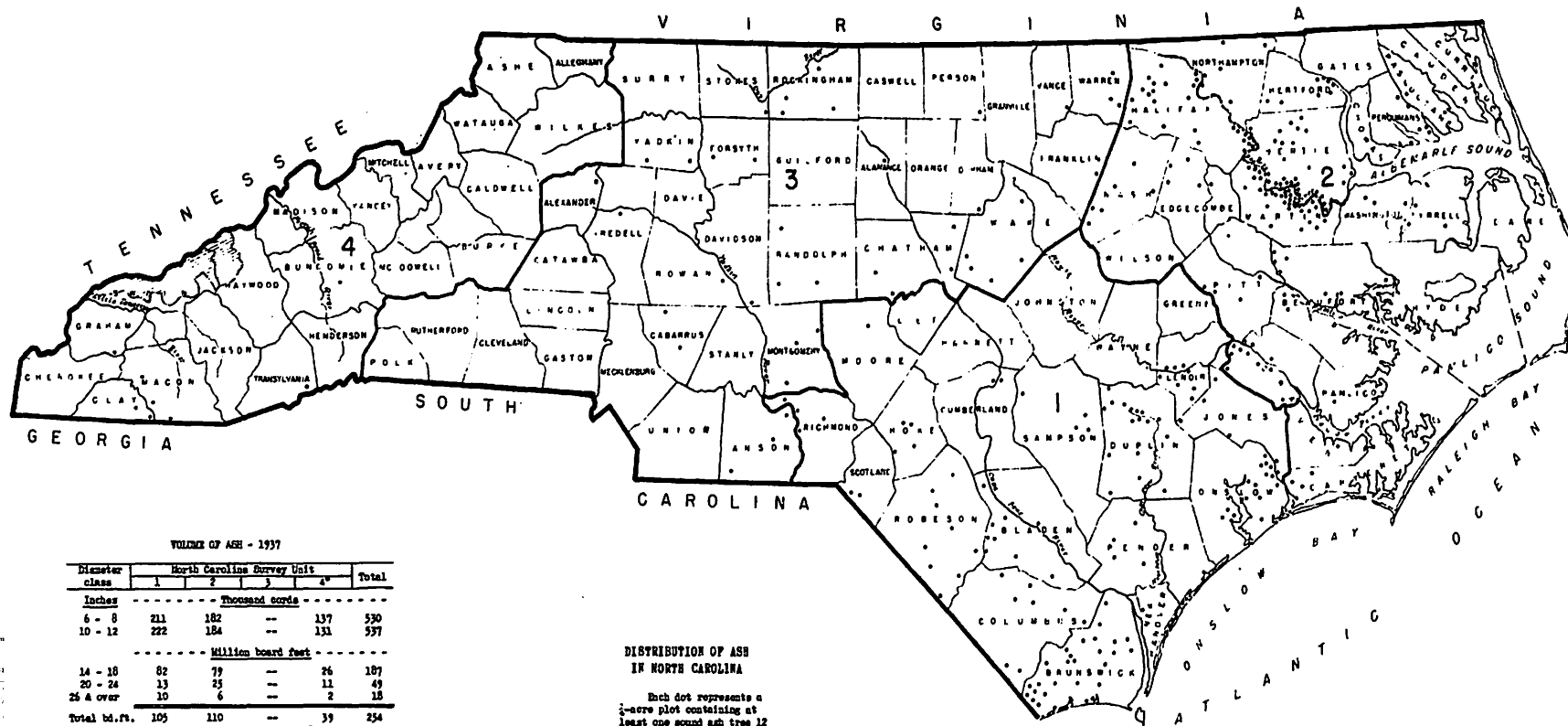




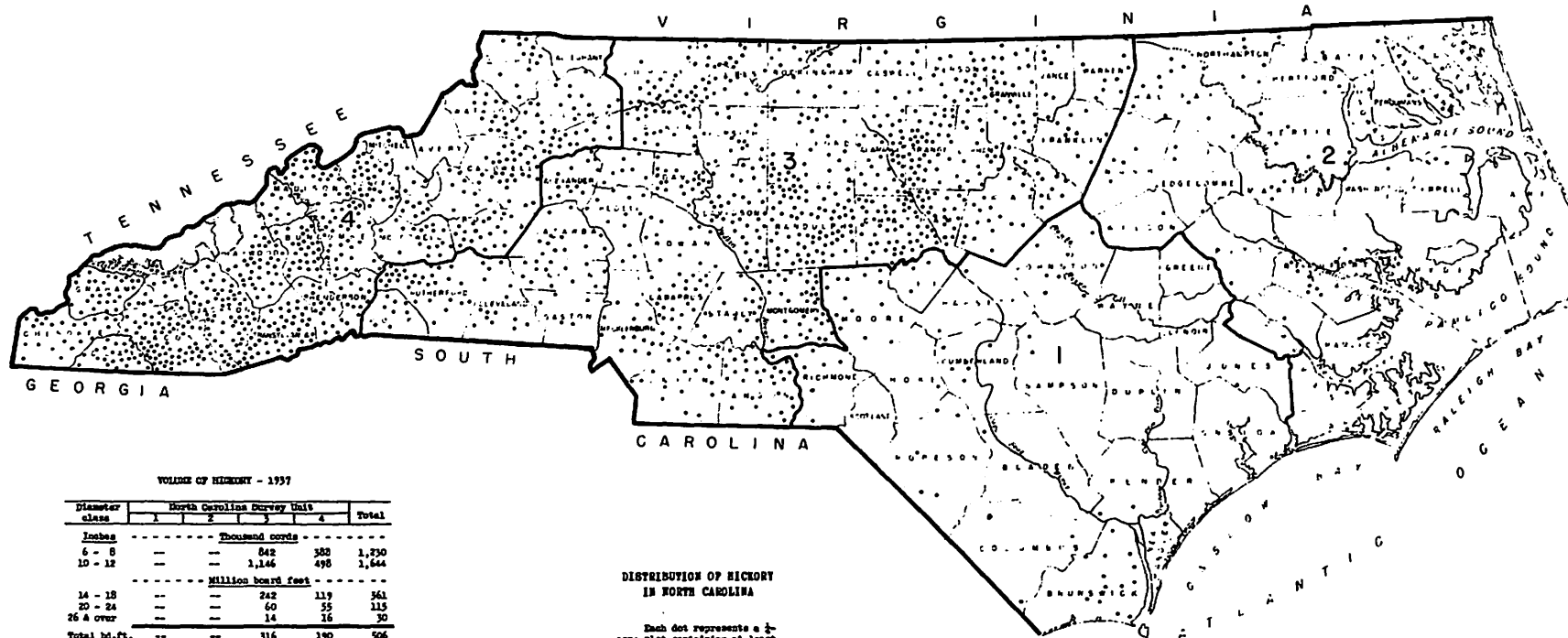
VOLUME OF WHITE OAK - 1937

Diameter class	North Carolina Survey Unit				Total
	1	2	3	4	
<hr/>					
<u>Inches</u>	<u>Thousand cords</u>				
6 - 8	509	518	1,729	600	3,356
10 - 12	553	556	2,370	597	4,076
<hr/>					
	<u>Million board feet</u>				
14 - 18	78	133	566	132	931
20 - 24	46	76	277	86	485
26 & over	40	110	123	66	339
<hr/>					
Total bd.ft.	164	321	966	304	1,755





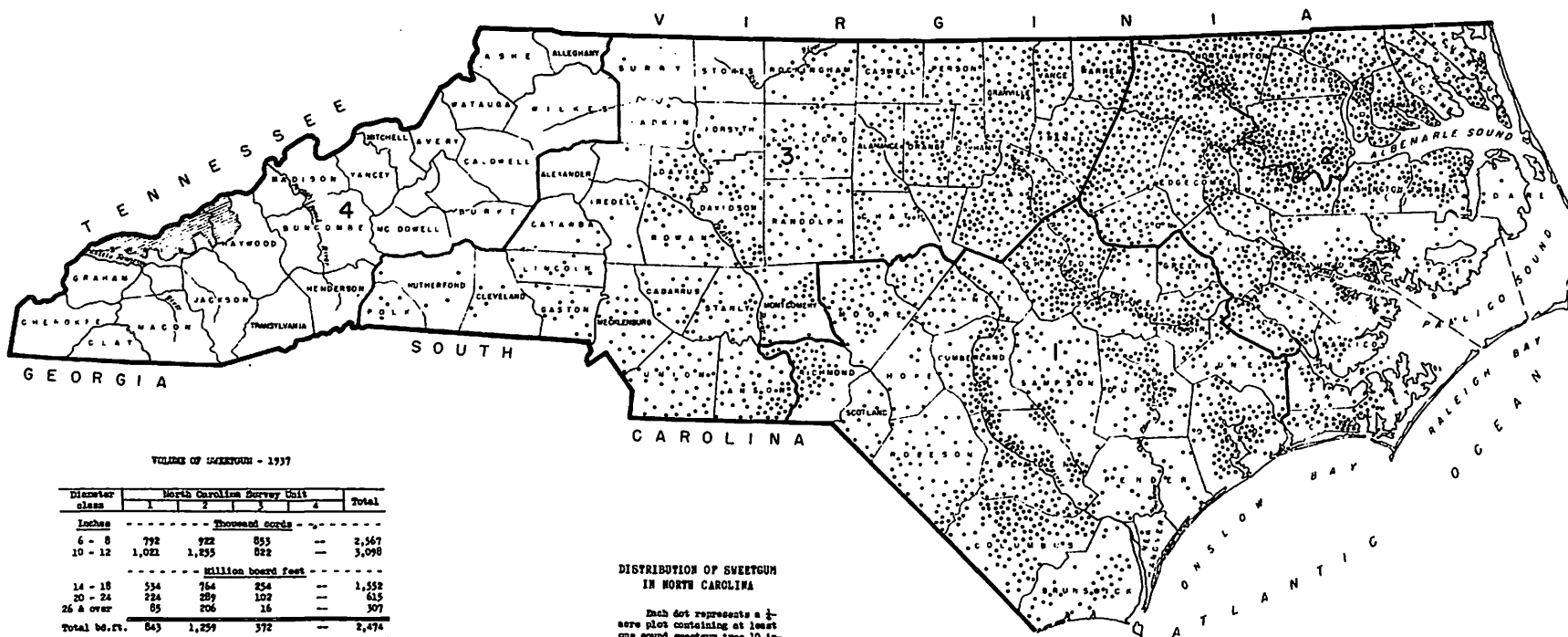
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### DISTRIBUTION OF NICKORY IN NORTH CAROLINA

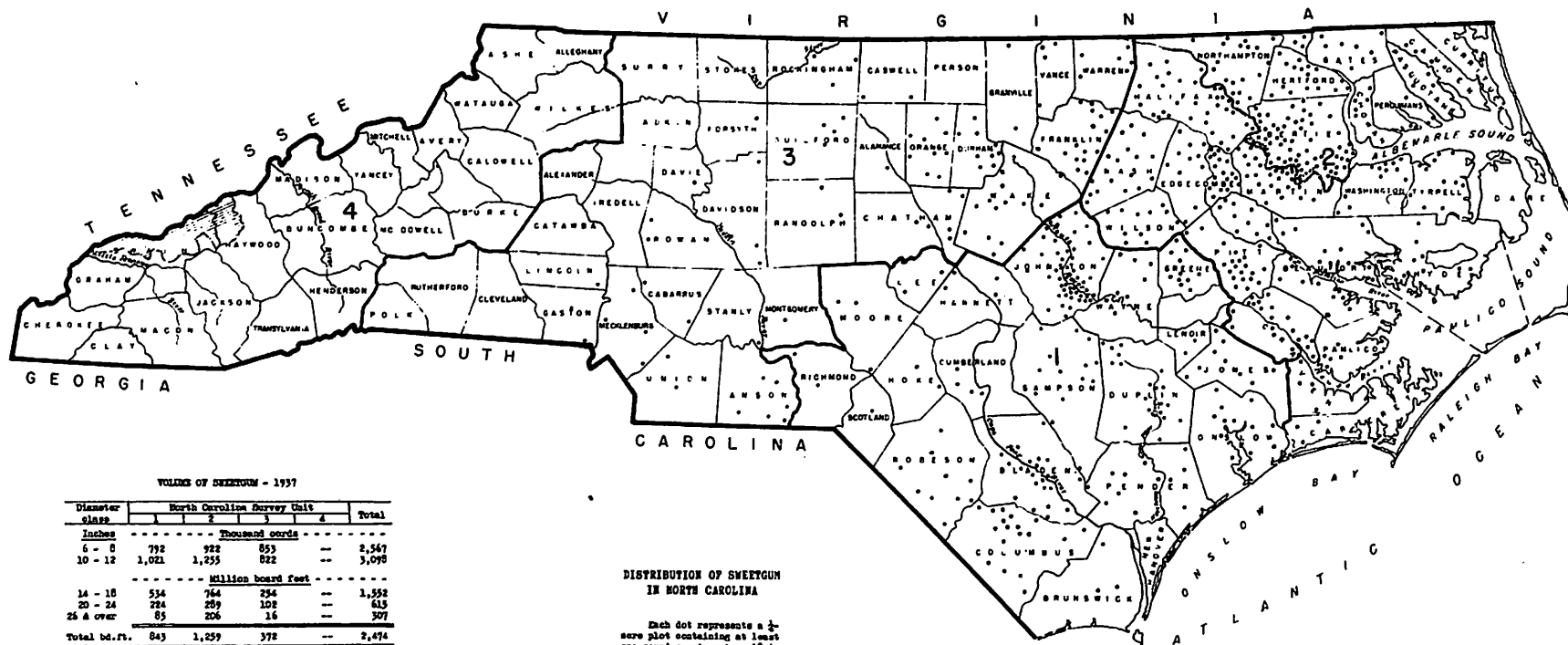
Each dot represents a  $\frac{1}{4}$ -acre plot containing at least one sound hickory tree 12 inches d.b.h. or larger.

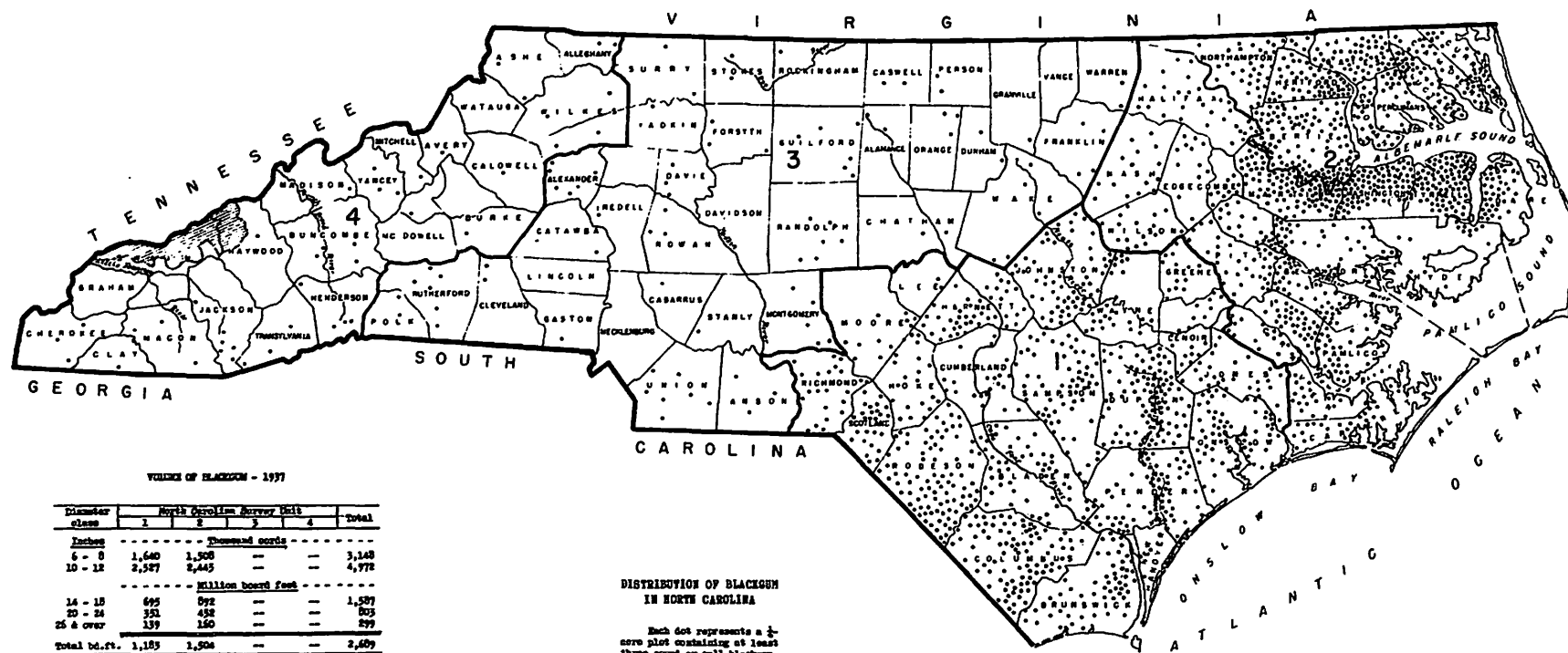
Diameter class	North Carolina Survey Unit				Total
	1	2	3	4	
Inches	----- Thousand cords -----				
6 - 8	--	--	242	383	1,750
10 - 12	--	--	1,146	498	1,644
	----- Million board feet -----				
14 - 18	--	--	242	119	561
20 - 24	--	--	60	55	115
26 & over	--	--	14	16	30
Total bd.ft.	--	--	316	590	506

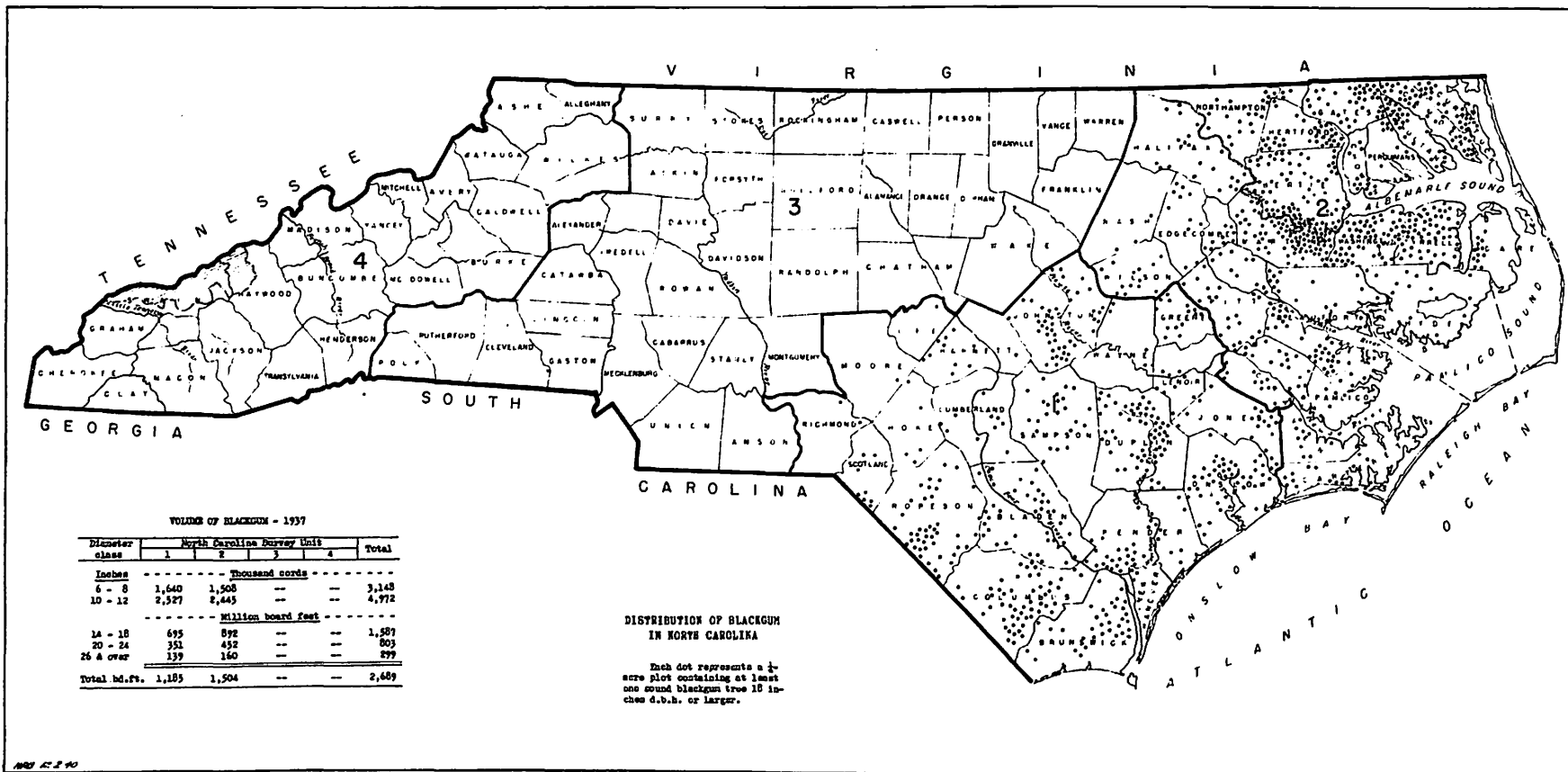


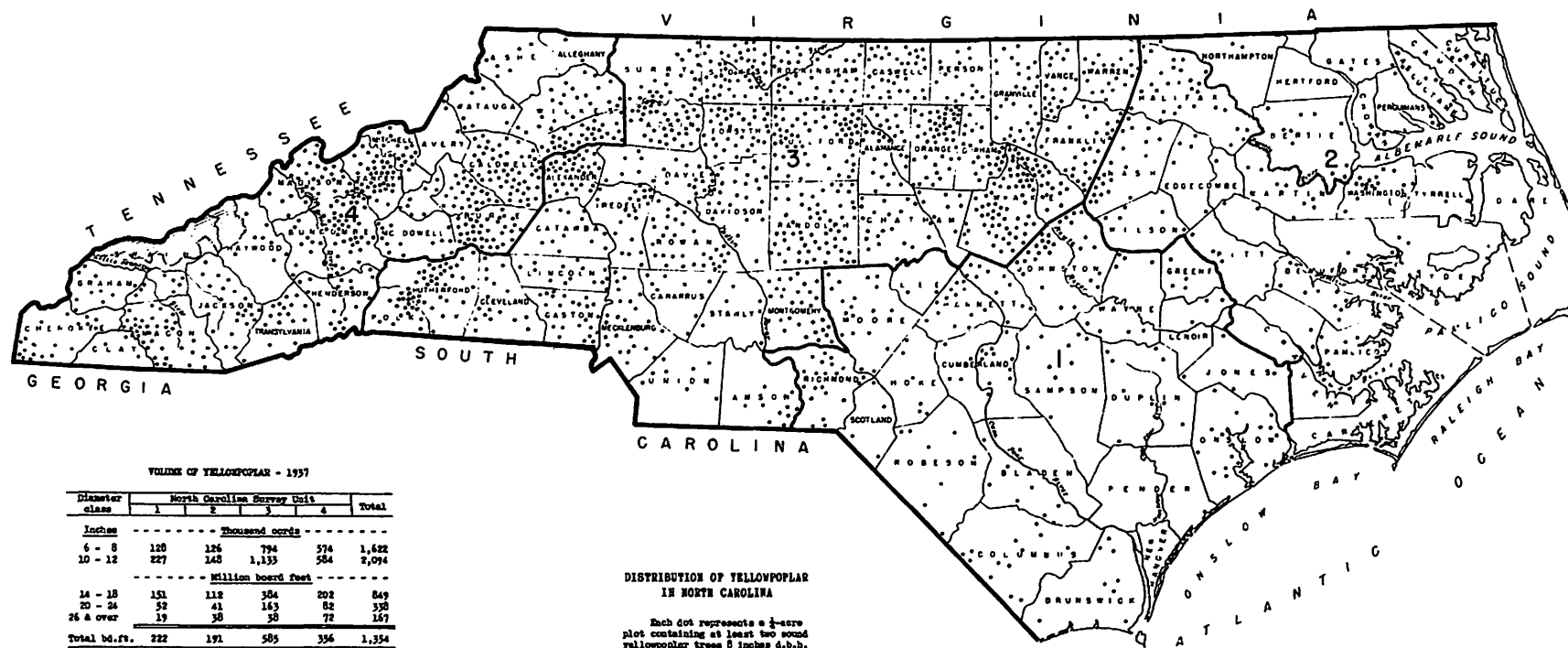
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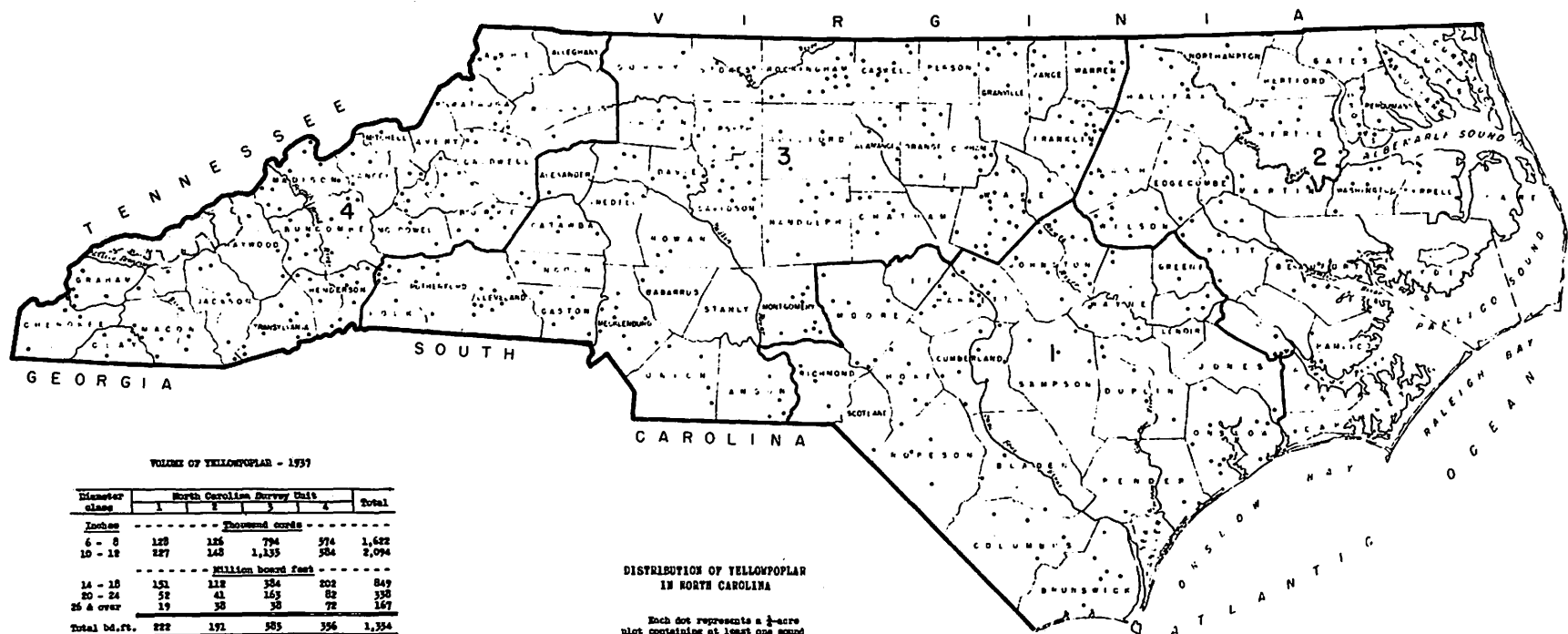


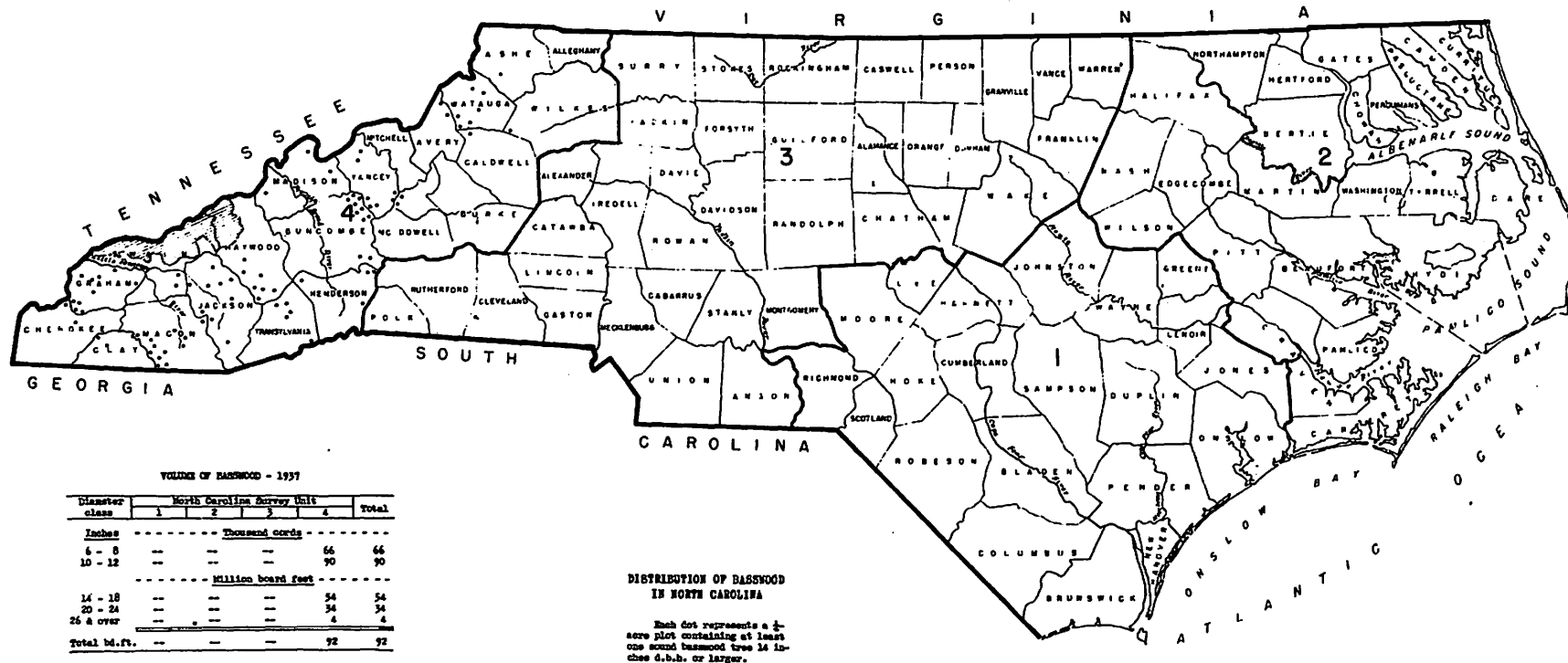












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